

## Technical specification for Electrochemical Workstation

Modular Potentiostat/ Galvanostat supplied with cell cable, USB cable, Windows based software, license and a getting started manual.

Note: Vendor should be an authorized provider of sophisticated high-precision potentiostat/galvanostat systems for past 15 Years or more with:

- A proven track record in multiple countries and national institutes
- Standard quality certifications such (ISO 9001)
- 10+ past installations of similar systems in India.

### Specifications of Electrochemical Workstation

Maximum Compliance Voltage:  $\pm 12$ Volts at  $\pm 800$  mA (Full Range) or more

Maximum Output Voltage:  $\pm 10$  Volts or more

Measured Voltage Resolution:  $0.3\mu\text{V}$  or better

Maximum Scan Rate: **1000 V/s with 15 mV step** - or better

Maximum output current:  $\pm 800$  mA, at  $\pm 12$ Volts or more (Expandable)

Measured Current Accuracy: **0.0003% or better**

Default Measured current resolution at 10nA range: 30 fA or better

Applied current resolution: 0.015% of range or better

Input impedance of electrometer:  $> 1\text{T}\Omega$  // 8 pF or better

### Electrochemical Impedance Spectroscopy

- Applied Frequency Resolution: 0.003%
- At 1 Hz frequency, impedance of  $0.01\ \Omega$  must be determined with  $0.3^\circ$  Phase accuracy & 0.3 % measured impedance accuracy. i.e – Measured impedance =  $0.01 \pm 0.00003\ \Omega$
- Frequency Range with External Waveform generator: 10  $\mu\text{Hz}$  to 32 MHz or more
- Frequency Range: 10  $\mu\text{Hz}$  to 1 MHz at a maximum current of  $\pm 400$  mA currents or more
- Required – Real time fit-simulation, live lissejous plots, live 3D plotting.
- Preferred Option in near future – An Advanced EIS software that selects equivalent circuit by itself and allows touch free fitting and simulation of upto 50+ EIS data files in single run

### Electrochemical Cell Set-up:

- Thermostated glass cells 50 ML volume of aqueous or non-aqueous electrolyte: Qt. 1
- PEEK or related cell wall material; Gas-in – out apparatus
- Glassy carbon disc 2mm Working Electrode – Qt. 1
- Metal Wire Auxillary Electrode - Platinum (99.9%) –Qt. 1
- Non-aqueous silver / silver chloride Reference Electrode – Qt. 1
- Electrode Polishing Kit -2 No

## **Software**

- Voltammetry software including CV, LSV,CA,CC etc
- Pulse software including DPV,NPV,SWV ACV, etc
- Fuel cell and super capacitor testing software
- Impedance spectroscopy software
- Photovoltaic /Battery testing software
- Corrosion software
- Equivalent fitting circuit software
- Remote liquid handling options for magnetic stirrer, sample changer & dosing
- Analysis tools for corrosion, CV, Impedance battery etc powerful graphic engine with useful features such as individual Axis scaling, overlays, multiple Y-axes, plot addition, 3D zooming and rotation.
- Each plot should be saved as a vector image file to use directly in paper or presentation. The fit and simulation software should include basic options such as find circle, element subtraction and an equivalent circuit library with all the modern EIS equivalent circuit models (Randle's, transmission line, etc.). Minimum visible plots in real time should be 8 or more.

## **Computer:**

- Compatible branded PC with i5 configuration, Printer should be quoted.
- CPU Intel Core i5, RAM 8 GB RAM, HDD 500 GB, GPU DirectX 9.0c compliant display adapter with 1GB RAM, TFT Monitor 22 inch, 101 Keys Keyboard, Optical Mouse, 3 USB Ports.
- Laser Printer (mono)
- 1KVA online UPS